REMARKS

The rejections of the claims 1, 2, 8-13 and 18 under 35 USC 102(a) as being anticipated by Derderian, US Patent 6458416, is respectfully traversed. The Office Action refers to the figures of Derdian as support for the notion that this reference teaches an atomic layer deposition (ALD) process in which a wafer to a first chemically reactive precursor dose insufficient to result in a maximum saturated ALD deposition rate on the wafer. However, this is not true.

Derdian shows and describes a process in which an initiation layer that does not completely cover a surface of a substrate is deposited. The Office Action appears to have mistaken this less than fully formed initiation layer as a less than fully saturated layer. Notice, however, that the present claims do not recite a less than fully saturated layer. Instead, the claims recite a precursor dose insufficient to result in a maximum saturated ALD deposition rate on a wafer. Simply because an initiation layer may be less than fully saturated does not mean that the use of a precursor dose insufficient to result in a maximum saturated ALD deposition rate.

First, the presence or absence of a complete initiation layer says noting about the rate at which that layer was deposited. Notice, it is the deposition rate that is recited in the claims. The Derderian figures cited in the Office Action include no information whatsoever regarding deposition rate and so cannot anticipate the present claims.

Second, the maximum saturated ALD deposition rate is determined by saturation by both precursors, not just a single precursor, and saturation is determined by the rate of layer growth in the presence of continued increasing precursor exposure dose. See e.g., paragraphs 7 and 35 of the present specification. Therefore, a set of figures that have no information regarding the rate of layer growth or the time varying nature of precursor exposure dose cannot anticipate the claimed invention.

For at least these reasons, the present claims cannot be anticipate by Derderian.

The rejection of claims 1-18 under 35 USC 102(a) as being anticipated by Park, US PGPUB 2002/0160585 is respectfully traversed. Park fails to teach distribution of precursors in a manner so as to provide substantially uniform film deposition. If anything, Park teaches the use of an axi-symmetric injector 24 within a chamber. As described in the present application, the

use of such apparatus does not provide substantially uniform film deposition and instead provides a film that is thicker towards the middle of the wafer than towards the edges. Park provides no data concerning film thickness profile and so cannot be said to even inherently describe a process such as that presently claimed. Therefore, claims 1-18 are patentable over Park.

The rejection of claims 25-33 under 35 USC 102(a) as being anticipated by Park, US PGPUB 2002/0160585 is respectfully traversed. Park fails to teach (inherently or explicitly) the use of a precursor dose selected so that film growth rate is substantially at a maximum value. Nothing in Park identifies how one of ordinary skill in the art would determine a film growth rate for a given set of precursors and reactor conditions. Moreover, there is no data describing how film growth rates varies with precursor does for a given set of reactor conditions. Instead, park is concerned only with a discussion of the eventual film thickness, which depends not only on the precursor doses, but also that of the reducing gas. For the experiments described in connection with Figures 6A and 6B, one cannot conclude there was any selection of any precursor dose based on film growth rate being a maximum or otherwise, because there is simply no discussion of how the film growth rate is affected by this selection. Hence, claims 25-33 are patentable over Park

For at least the above reasons, none of the presently pending claims are anticipated by the cited references.

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Respectfully submitted,

SONNENSCHEIN NATH & ROSENTHAL LLP

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/Tarek N. Fahmi/
Tarek N. Fahmi, Reg. No. 41,402

P.O Box 061080
Wacker Drive Station, Sears Tower
Chicago, Illinois 60606
(650) 798-0320